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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/676,556	09/30/2000	Yen-Kuang Chen	042390.P8657	6918

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EXAMINER

DO, CHAT C

ART UNIT	PAPER NUMBER
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2193

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/676,556	Applicant(s) CHEN ET AL.	
	Examiner Chat C. Do	Art Unit 2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2006 and 20 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-32, 34-37, 39-42 and 44-46 is/are rejected.
- 7) ☒ Claim(s) 33, 38 and 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>03/20/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to Amendment filed 03/14/2006 and 03/20/2006.
2. Claims 29-46 are pending in this application. Claims 29, 34, and 39 are independent claims. In Amendment, claims 1-28 are cancelled and claims 44-46 are added. This Office Action is made non-final after a RCE filed 03/14/2006.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 29-46 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 29-46 clearly recite a method, readable medium, and system for multiplying matrices according to a mathematic algorithm. In order for such a claim to be statutory, the claim must include either a practical application at useful end or a discrete, useful, and tangible result(s). However, it is clear from the claims that the claims merely recite step or non-specific means for data computation and manipulation in performing a mathematical function. In addition, the readable medium claims 34-38 and 45 are not tangible such as electrical, optical, acoustical or other form of propagated signals (e.g., carrier waves, infrared signals, digital signals, etc.) as cited in the specification page 6. The input is a set of number and output is also a set of number.

Even though it receives a multimedia signal, but it does not include any practical application at useful or a tangible result. Therefore, claims 29-46 are clearly directed to a non-statutory subject matter.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains: Patentability shall not be negated by the manner in which the invention was made.

6. Claims 29-32, 34-37, and 39-42 are rejected under 35 U.S.C. 103(a) as being obvious over Thuyen Le et al. ("A new flexible architecture for variable length DC targeting shape-adaptive transform") in view of Mogi et al. (U.S. 6,687,724).

Re claim 29, Thuyen Le et al. disclose a machine-implemented method (e.g. abstract) comprising: receiving a multimedia signal having data values (e.g. page 1949 first paragraph under the introduction section); forming the data values into a matrix of inputs [X] (e.g. $x(n)$); forming a matrix [A] of predetermined values (e.g. left column page 1950 lines 12-22) and multiplication operations (e.g. equation 2 in left column page 1950); factoring [A] into a butterfly matrix [B], a shuffle matrix [S], and a multiplication matrix [M] (e.g. as C(n), F of equation 3, S of equation 7, and P of equation 4 respectively), wherein the multiplication operations are selectively positioned into paris within [M] (e.g. Figure 1 and left column page 1951 lines 3-7 wherein plurality of multiplications are performed by plurality of CFMB modules and the plurality of CFMB

modules are parallel; CFMB-0 & CFMB-1; CFMB-2 & CFMB-3); and executing by a processor instruction (e.g. $P_{(x,y),7}$). Thuyen Le et al. do not disclose simultaneously executing multiplication operations on the grouped set of values using a Single Instruction Multiple Data (SIMD) instruction. However, Mogi et al. disclose in column 1 that the SIMD instruction is widely used to execute multiplication operations on a group set of values (e.g. col. 1 lines 40-55). Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the SIMD instruction to simultaneously executing multiplication operations on the grouped set of values as seen in Mogi et al.'s invention into Thuyen Le et al.'s invention because it would enable to increase the system performance by executing multiple data simultaneously and efficiently in matrix multiplication (e.g. col. 1 lines 40-55).

Re claim 30, Thuyen Le et al. do not disclose the SIMD is the Packed Multiply and Add (PMADDWD) instructions. However, Mogi et al. disclose in Figure 2 the SIMD is the PMADDWD instruction (col. 2 lines 5-16). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the PMADDWD instructions as seen in Mogi et al.'s invention into Thuyen Le et al.'s invention because it would enable to increase the system performance by executing multiple data simultaneously (e.g. col. 1 lines 40-55).

Re claim 31, Thuyen Le et al. further disclose values within [B] and [S] are integers selected from the group consisting of 1, 0 and -1 (e.g. F and S matrices in page 1950).

Re claim 32, Thuyen Le et al. further disclose [A] is a 4-point Discrete Cosine Transform (DCT) transformation matrix (e.g. abstract), [X] represents a time domain of a video signal, and [Y] represents a frequency domain of the video signal (e.g. first paragraph under introduction section in page 1949).

Re claim 34, it is a machine-readable medium having instructions claim of claim 29. Thus, claim 34 is also rejected under the same rationale as cited in the rejection of rejected claim 29.

Re claim 35, it is a machine-readable medium having instructions claim of claim 30. Thus, claim 35 is also rejected under the same rationale as cited in the rejection of rejected claim 30.

Re claim 36, it is a machine-readable medium having instructions claim of claim 31. Thus, claim 36 is also rejected under the same rationale as cited in the rejection of rejected claim 31.

Re claim 37, it is a machine-readable medium having instructions claim of claim 32. Thus, claim 37 is also rejected under the same rationale as cited in the rejection of rejected claim 32.

Re claim 39, it is a system claim of claim 29. Thus, claim 39 is also rejected under the same rationale as cited in the rejection of rejected claim 29.

Re claim 40, it is a system claim of claim 30. Thus, claim 40 is also rejected under the same rationale as cited in the rejection of rejected claim 30.

Re claim 41, it is a system claim of claim 31. Thus, claim 41 is also rejected under the same rationale as cited in the rejection of rejected claim 31.

Re claim 42, it is a system claim of claim 32. Thus, claim 42 is also rejected under the same rationale as cited in the rejection of rejected claim 32.

Response to Arguments

7. Applicant's arguments filed 03/14/2006 have been fully considered but they are not persuasive.

a. The applicant argues in page 8 for independent claims 29, 34, and 39 that the cited reference fails to disclose a butterfly matrix [B] as cited in the claimed invention.

The examiner respectfully submits that the current language of independent claims 29, 34, and 39 do not detail or define the structure of the butterfly matrix.

Thus, the cited matrix $F_{10 \times 4}$ in the reference clearly meets the limitation of the butterfly matrix.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2193

April 25, 2006


KAKALI CHAKI
SUPERVISORY PATENT EXAMINER
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